Chapter Five

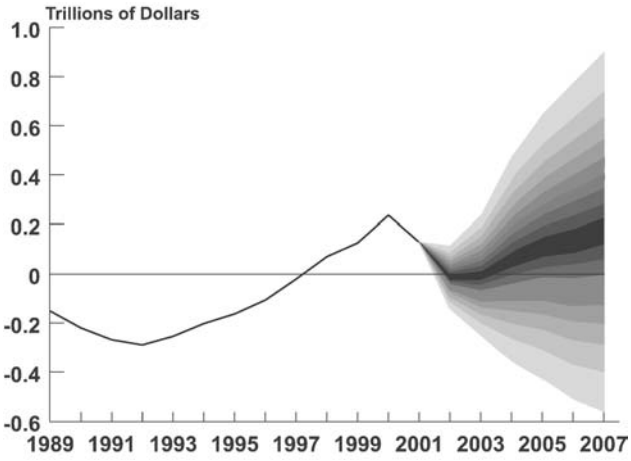
The Uncertainty of Budget Projections

The baseline projections in Chapters 1 and 2 represent the most likely of the possible outcomes for the budget and the economy, based on current trends and the assumption that policies now in place do not change. But considerable uncertainty surrounds those projections for two reasons. First, future legislation is likely to alter the paths of federal revenues and spending. The Congressional Budget Office does not predict future legislation—indeed, any attempt to incorporate future legislative changes into its baseline would undermine the usefulness of those numbers as a base against which to measure the effects of legislative action. Second, the U.S. economy and the federal budget are highly complex and are affected by many economic and other changes that are difficult to predict. As a result, actual budgetary outcomes will almost certainly differ from CBO's baseline projections, even after adjusting for new legislation.

This chapter explores how the accuracy of the economic and technical assumptions that CBO incorporates into its baseline can affect the accuracy of its budget projections. Looking back, the chapter describes CBO's record of projections and shows how reliable CBO's current and future projections might be if they are as accurate as those of the past. Looking forward, it uses several scenarios to describe how the budget might differ from CBO's baseline projections.

The outlook for the budget (given current legislation) can best be described not as the single row of numbers presented in CBO tables but as a fan of possible outcomes around those numbers, which widens as the projection extends (see Figure 5-1). The fan in

Figure 5-1.
Uncertainty in CBO's Projections of the Total Budget Surplus Under Current Policies



SOURCE: Congressional Budget Office.

NOTES: This figure shows the estimated likelihood of alternative projections of the surplus under current policies. The calculations are based on CBO's past track record. The CBO projections described in Chapter 1 fall in the middle of the darkest area. Under the assumption that policies do not change, the probability is 10 percent that actual surpluses will fall in the darkest area and 90 percent that they will fall within the whole shaded area.

Actual surpluses will of course be affected by legislation enacted during the next 10 years, including decisions about discretionary spending. The effects of future legislation are not included in this figure.

An explanation of how this probability distribution was calculated will appear shortly on CBO's Web site (www.cbo.gov).

the figure is based on CBO's record of accuracy in its budget projections. The baseline budget projections presented in Chapter 1 fall in the middle of the highest probabilities—shown in the darkest part of the figure. But nearby projections—other paths in the darkest part of the figure—have nearly the same probability of occurring as do the baseline projections. Moreover, projections that are quite different from the baseline also have a significant probability of coming to pass. Based on the historical record, the budget surplus or deficit is likely to fall within the fan around CBO's projections about 90 percent of the time, in the absence of new legislation.

Figure 5-1 is intentionally fuzzy because the uncertainties are themselves estimates; as such, they may misstate the true uncertainty of current forecasts. The record on which the fan chart is based is short, and it may not be representative of future uncertainties. Historically, CBO's forecasts have been least accurate around cyclical turning points (times when the economy moves from expansion to recession, or vice versa), which economists are generally unable to predict reliably. However, from 1981 (the earliest year for which complete data are available that are suitable for this analysis) until 2001, the economy experienced just two recessions and two long expansions. The first recession (that of 1981-1982) occurred at the start of the period, so the record includes only one short-term forecast from before the recession and no longer-term forecasts that refer to that recessionary period. Thus, CBO has very little information on the accuracy of its forecasts around recessions.

In addition to uncertainty about cyclical turning points, the economic and budget trends that underlie the 10-year outlook are unusually hard to discern at present. Many commentators, including CBO, believe that major structural changes have created a "new economy" centered on information technology. But CBO's projections, like those of other forecasters, are based on very limited information about increased growth of productivity and strong investment in information technology over just a few years, from the mid-1990s through 2000. Moreover, in the past year, many companies central to the new economy have suffered setbacks, reflected in the prices of their stocks, and it has become clear that the investment boom included some investments that proved unprofitable. So even though CBO's 10-year projections continue to assume that the gains in the trend rate of productivity growth seen in the late 1990s (adjusted for the effects of the business cycle) were real and will persist—though temporarily obscured by the current recession—that projection has become more uncertain.

Another way to show the uncertainty of projections is to calculate the effects of specific sets of alternative assumptions on the economic and budget outlook. To illustrate the possible implications of alternative cyclical and trend assumptions, CBO has chosen four scenarios. The two cyclical scenarios explore the possibilities of a substantially faster recovery from or a deepening of the current recession than the baseline projections assume. The two trend scenarios concentrate on differing assumptions about the trends that might be experienced over a 10-year period. One of those scenarios assumes that the favorable economic trends seen from 1996 through 2000 will continue for the next decade, once the nation emerges from recession; the other assumes that the underlying trends the economy will follow after the recession is over will be less favorable, like those of 1974 through 1995. The projections that result from those four scenarios suggest a very wide range of possible outcomes for the budget.

Policymakers will have to decide what that degree of uncertainty means for a budget process that currently relies on 10-year projections. Looking forward five or 10 years allows the Congress to consider the longer-term budgetary implications of specific policy changes. But it also increases the likelihood that budgetary decisions will be made on the basis of projections that later turn out to have been far wrong.

The Accuracy of CBO's Past Budget Projections

Because baseline budget projections are destined to deviate from actual outcomes, assessing their historical accuracy is not a simple matter. Baseline projections are meant to serve as a neutral reference point for evaluating policy changes, so they make no assumptions about future legislation that might alter

Box 5-1.
Innovations in This Analysis

The Congressional Budget Office (CBO) introduced the fan chart presentation of the uncertainty of projections in its January 2001 report. This report takes that presentation a step farther, distinguishing inaccuracies that are correlated with the business cycle from inaccuracies in the assessment of trends that are unrelated to the business cycle. That is a useful distinction, because inaccuracies in the assessment of trends are likely to grow indefinitely as the projection horizon extends, but inaccuracies correlated with the business cycle would not be expected to grow forever. According to CBO's estimates, in fact, cyclical inaccuracies are small in the first two years of a projection—that is, the current year and the budget year—when CBO attempts to reflect its view of the business cycle in its forecast. They plateau at a constant level for the last three years of the projection, when CBO does not attempt to forecast the business cycle. The remaining inaccuracies grow almost linearly with the forecast horizon. According to that decomposition, discrepancies between CBO's budget projections five years out and budgetary outcomes have consisted in roughly equal parts of discrepancies due to business cycles (which CBO does not attempt to project so far in advance) and inaccuracies in assessing the economic and other trends that underlie the budget.

That new analysis has widened the five-year fan of uncertainty in budget projections, compared with the one CBO published in January 2001. It is described in detail in a document that will be available shortly on CBO's Web site (www.cbo.gov).

For the purpose of this chapter, discretionary spending is handled somewhat differently than in CBO's usual analyses of revisions to budget projections (but in the same way as last year's chapter). In the analysis of revisions, CBO allocates part of any discrepancies between the assumptions for discretionary spending in the baseline and the amounts finally enacted and spent to the category of economic or technical differences. (For more details about those categories, see Chapter 1.) But discretionary spending, which is appropriated annually, is not controlled by the kind of permanent laws and automatic rules that determine entitlement spending and taxes (in the absence of new legislation). Indeed, when the Congress sets discretionary spending, it does so through new legislation. As a result, legislation accounts for the lion's share of the differences between baseline projections and actual outlays for such programs. Because attributing all discrepancies in discretionary spending to legislation permits the use of a larger historical record in this analysis, CBO has excluded the small variations for other reasons from the uncertainties discussed in this chapter.

This analysis (like last year's) also omits any distinction between economic and technical differences. That distinction can be arbitrary and subject to change as the underlying economic data are revised. In any case, the distinction is unnecessary for this analysis.

current budget policies. Of course, new legislation is likely to affect spending and revenues, but the purpose of baseline estimates is not to forecast legislation. Consequently, this chapter concentrates on inaccuracies in forecasting that stem from economic and technical factors, not from the effects of new legislation.

To assess the accuracy of its past annual projections, CBO compared those projections with actual budgetary outcomes and attempted to determine the sources of any differences (after adjusting for the estimated effects of policy changes). (See Box 5-1.) The comparisons included 20 sets of projections for the ongoing fiscal year (the one in which the projections were made), 19 sets for the following fiscal year (referred to as the budget year), and 15 sets of projections that extend five years into the future.[1] (CBO has also examined in greater detail its record of economic forecasts. See Congressional Budget Office,

1. The projections are those made in July 1981 and CBO's winter projections (usually published in January) from 1983 through 2001. Insufficient data were available to use either projections made before 1981 or the projection made in early 1982. For projections made before 1996, a full five years of projections could be used. For projections made since that date, progressively shorter projection spans could be used because the most recent actual data against which they could be compared for accuracy is for fiscal year 2001. To calculate the role of policy changes, CBO used estimates of the budgetary effects of legislative changes that were made close to the time the legislation was enacted.

CBO's Economic Forecasting Record, available at www.cbo.gov.)

On average, the absolute difference (without regard to whether the difference was positive or negative) between CBO's estimate of the federal deficit or surplus and the actual result was 0.5 percent of gross domestic product for the ongoing fiscal year, 1.1 percent for the budget year, and 3.2 percent for the fourth year beyond the budget year, adjusted for the effects of subsequent legislation (see Table 5-1). If those averages were applied to CBO's current baseline, the actual surplus or deficit could be expected to differ in one direction or the other from CBO's projections by about $50 billion in 2002, $130 billion in 2003, and over $350 billion in 2007.

Misestimates of revenues have generally been larger than misestimates of outlays, reflecting the greater sensitivity of revenues to economic develop-

Table 5-1.
Average Difference Between CBO's Budget Projections and Actual Outcomes Since 1981, Adjusted for Subsequent Legislation (In percent)

	Year for Which the Projection Was Made					
	Current Year	Budget Year	Budget Year + 1	Budget Year + 2	Budget Year + 3	Budget Year + 4
Difference as a Percentage of GDP						
Surplus or Deficit						
Average difference[a]	0.3	0.3	0.1	0	-0.3	-0.7
Average absolute difference	0.5	1.1	1.6	2.1	2.7	3.2
Revenues						
Average difference	0.1	0.1	-0.1	-0.2	-0.3	-0.6
Average absolute difference	0.3	0.7	1.2	1.6	1.9	2.2
Outlays						
Average difference	-0.2	-0.2	-0.2	-0.1	0	0
Average absolute difference	0.3	0.5	0.7	0.8	1.0	1.2
Difference as a Percentage of Actual Outcome						
Revenues						
Average difference	0.3	0.3	-0.8	-1.4	-2.3	-4.1
Average absolute difference	1.8	3.9	6.6	8.6	10.2	11.9
Outlays						
Average difference	-0.9	-0.9	-1.0	-0.9	-0.4	-0.3
Average absolute difference	1.5	2.2	3.2	3.9	5.0	5.9

SOURCE: Congressional Budget Office.

NOTES: This comparison covers the baseline budget projections that CBO published in July 1981 in *Baseline Budget Projections: Fiscal Years 1982-1986* and the ones it published each winter between 1983 and 1999 in *The Economic and Budget Outlook*.

The current year is the fiscal year in which the projections are made; the budget year is the following fiscal year.

Differences are actual values minus projected values. Unlike the average difference, the average absolute difference ignores arithmetic signs and thus indicates the average distance between actual and projected values without regard to whether individual projections are overestimates or underestimates.

a. A positive average difference for the surplus or deficit means that, on average, CBO underestimated the surplus or overestimated the deficit.

ments. In absolute terms, revenue projections have differed from actual outcomes by an average of about 1.8 percent of revenues for the current year, 3.9 percent for the budget year, and 11.9 percent for the fourth year beyond the budget year. Inaccuracies in outlay projections were similar to those in revenue projections for the current year but only half as large as revenue inaccuracies for the budget year and subsequent years.

The misestimates of the budget's bottom line went in both directions: sometimes the projections were too high and at other times too low. On average, CBO's forecast of the deficit or surplus has tended to be slightly pessimistic—that is, CBO overestimated deficits—for the current year and the budget year, and slightly optimistic for the fourth and fifth years of the projection. (That pattern may reflect the fact that deficit projections made before 1991 were optimistic and those made in more recent years were pessimistic; data on the later years are incomplete for projections made after 1996.) However, the average underestimates and overestimates of the budget balance at different horizons were not statistically significant and thus were not incorporated into Figure 5-1.

Sources of Past Inaccuracies in Projecting Revenues

Misestimates of revenues can rarely be traced to a single cause, but a few major factors can be identified. Both recessions and rapid expansions can be a problem for revenue projections—as noted earlier, predicting turning points in the business cycle is one of the most difficult challenges facing economic forecasters. Thus, revenues tend to be overestimated in forecasts done just before recessions and underestimated in forecasts made before rapid expansions. Until the current recession, the major source of inaccuracies in revenue projections made during the economic expansion of 1995 through 2000 was the failure to predict both the apparent acceleration in the trend growth of the economy and the economic changes associated with it, especially the boom in the stock market and the increasing concentration of income growth among taxpayers in the highest tax brackets. The stock market boom led to huge capital gains on paper, which boosted tax revenues as investors began to realize those gains. It also raised the income of households in higher tax brackets through stock options (which when exercised count as ordinary income and not capital gains).

The causes of the projected shortfall in revenues in 2001 (after adjusting for legislation) will not be known until data from tax returns are tabulated over the next couple of years. It is likely, however, that some combination of the factors that pushed receipts above expectations in the prior half-decade contributed to the recent shortfall as well.

Sources of Past Inaccuracies in Projecting Nondiscretionary Outlays

Economic performance affects federal spending, both directly and indirectly. CBO often overestimated inflation in the forecasts it made in the early 1980s, and more recently it anticipated an upturn in inflation during the late 1990s that did not occur. Estimates of inflation that are too high result in overestimates of cost-of-living adjustments for beneficiaries of many cash benefit programs and overestimates of reimbursements for health care providers. CBO also overestimated unemployment rates in the 1990s, which meant a corresponding overstatement of caseloads for means-tested benefit programs (such as Food Stamps and Medicaid) and of the number of applicants for unemployment and disability benefits.

Misestimates of those broad economic trends, however, account for only part of the inaccuracies in past projections of nondiscretionary outlays. The remainder come from inaccurate assumptions about such factors as what proportion of eligible individuals and families will participate in benefit programs, how sound financial institutions will be, and how health care providers will behave. Those factors can be extremely difficult to predict. For example, the deposit insurance crisis of the 1980s came as a surprise, and the year-by-year costs for its cleanup were highly variable and hard to estimate. CBO also did not anticipate the states' expanded use of creative financing mechanisms to obtain federal Medicaid funds, which occurred in the late 1980s and early 1990s, or the temporary slowing of the growth of Medicare costs in the late 1990s.

Alternative Economic and Budget Scenarios

The differences between CBO's past projections and actual budgetary outcomes could suggest how accurate future projections will be—if future inaccuracies mirror those of the past. But whether that will happen is an open question. Another way of looking at the uncertainty of projections is to consider how different assumptions could affect the projections. Such alternative scenarios give a qualitative understanding of how projections might miss the mark, though it is generally not possible to assess the probability of such alternatives.

CBO's past performance probably should not be used to gauge how accurate short-term budget projections will be in periods around recessions. Only two recessions have occurred since CBO started to make five-year projections, so the record is simply inadequate for extrapolation. Even a larger record might be misleading because recessions do not tend to follow a closely similar script—each one is different.

Box 5-2.
Risks from Terrorism

The terrorist attacks on the United States on September 11 have brought many changes, but at least up to now there is little evidence of any large and persistent effect on the economy. (Actions that the federal government might take to counter terrorism could have budget implications of their own. Those are discussed in Chapter 7.) Shocking as the losses of life and property were, they did not have much impact on the nation's $10 trillion economy. The new awareness of vulnerability to attacks could, in principle, change the economy in a number of ways: by diverting both public and private resources to security and away from more conventionally productive uses; by discouraging commitment to large and risky investments; or by leading people to save more in order to insure against hard times in the future. Possible future actions by the United States could also have economic impacts: for example, a widening of the war against terrorism could have serious, though probably temporary, effects on oil markets. The economic projections in Chapter 2 reflect an estimate of the possible diversion of resources to security spending, which will tend to increase business costs and thus reduce productivity. However, although those estimates are necessarily highly uncertain, they suggest that the overall economic impact is likely to be small.

The impact of terrorism risks on spending by businesses for new buildings and equipment is even harder to quantify and may be negligible. For that reason, the economic projections in Chapter 2 do not attempt to estimate that impact. However, it remains a risk to the forecast because insurance against losses from terrorism may be very expensive or even unavailable. The possibility of future terrorist attacks poses a difficult problem for the insurance industry, because those risks are impossible to quantify and thus to price correctly. If insurance companies and their reinsurers were to decide that they did not wish to take up some proportion of those risks, owners of existing businesses would probably self-insure to a large extent rather than go out of business. As a consequence, some companies' bond ratings could drop and stock prices could fall, reflecting the increased risk that stockholders would assume. For new investment, businesses would have to take into account the increased risk from terrorism in deciding whether to spend. Certain projects, particularly large, iconic buildings that might be attractive targets for terrorism, might not be built. In addition, some businesses require insurance either as part of the terms of loan agreements (mortgages) or because of regulations. If insurance became unavailable, those agreements and regulations would have to be changed to avoid business interruptions.

The impact on investment is likely to be somewhat smaller if insurance for terrorism risks remains available but its cost rises. Self-insuring is likely, in many cases, to be more costly than purchasing insurance because the insurance market pools risk more widely than self-insurers can. Moreover, the insurance market allows risk to be borne by those who can most easily bear it. There is a distinct advantage to keeping the insurance market for terrorism risks operating, which is why many governments have responded to those risks with devices—such as government-sponsored insurance pools and limited

In addition, making longer-term projections for the period after the current recession is over requires assessing trends in the economy that can be very difficult to determine. Will the performance of the next 10 years be like the extraordinary expansion of the late 1990s, or will it revert to the relatively lackluster performance of the 1974-1995 period? Might the attacks of September 11, and the increased awareness of terrorist threats that has followed them, weaken the economy? (For more on that question, see Box 5-2.) The accuracy of assumptions about those factors—together with assumptions about how revenues relate to gross domestic product and how much social spending (especially on medical programs) will grow—will determine the accuracy of the 10-year budget projections.

To examine the implications of those questions, CBO has constructed additional scenarios that make alternative economic and budgetary assumptions—two that describe a faster recovery from the current recession or a deepening of the recession, and two that describe alternative views about the longer-term trends that could affect the budget. The cyclical and trend scenarios could in principle be combined. For example, a deeper recession could be combined with

Box 5-2.
Continued

government reinsurance—that maintain a large role for the private insurance market.[1] As of January 2002, there is no evidence that withdrawal of coverage for terrorism risks is having a major effect on economic activity.

The fear of future terrorist attacks and business disruptions could also affect private consumption. Many economists thought that the September 11 attacks would sharply diminish consumer confidence and thus spending on consumption. In fact, spending has held up surprisingly well since the attacks (see Chapter 2).

If the war against terrorism was to widen, its effects could include a rise in the price of oil. So far, the oil market has been affected much more by the weakness of the world economy than by war risks, and the price for the West Texas Intermediate contract (a standard price for oil) has fallen from about $28 per barrel in December 2000 to roughly $20 per barrel at the end of December 2001. The Congressional Budget Office's (CBO's) projections assume that the current price weakness will be temporary and that the price of a barrel of oil will return to around $25 as the world economy improves. However, violence in the Persian Gulf region could disrupt the flow of oil enough to create a temporary price spike, such as occurred in 1990, when the price of oil rose briefly to $40 a barrel. Such a price spike would have only a small, temporary effect on the U.S. economy. More persistent price increases could occur if there were increased violence and unrest in the Gulf region that affected oil production.

A persistent increase in the price of oil from $25 to, say, $35 per barrel would raise costs to U.S. consumers and businesses and would in some ways act as a tax. Initially, the most significant effects on the U.S. economy would result from the diversion of consumers' expenditures toward energy purchases and away from other things, and from a short-run increase in inflation. Assuming that the Federal Reserve allowed interest rates to rise to head off any permanent increase in inflation, growth of gross domestic product might be lowered by 1 percentage point in the first year. In subsequent years, if oil prices continued at the higher level, on average, businesses would probably alter their investment plans, retiring some equipment and purchasing new, more energy-efficient equipment. Both the higher depreciation and the increased importance of energy efficiency, rather than overall productivity, in business decisions about investment might slow the growth of the economy—indeed, some analysts attribute a significant part of the slowdown in productivity growth after 1974 to the oil price increases of 1974 and 1980. According to CBO's simulations, such an increase in oil prices could worsen the budget outlook by upward of $40 billion per year for a few years as long as discretionary spending followed the ordinary rules of budget projections. In addition, higher oil prices would raise the cost of energy purchases by the federal government and could put upward pressure on discretionary spending.

1. See Congressional Budget Office, *Federal Reinsurance for Terrorism Risks* (October 2001).

a less optimistic trend for the economy, in which case the budget would worsen by about as much as the sum of the effects in each of the scenarios. Whereas the fan chart describes how unexpected events in the past have affected the accuracy of CBO's budget projections, the scenarios suggest how specific future events could affect budgetary outcomes.

How likely is it that the actual 10-year outcomes for the budget will lie between the optimistic and pessimistic scenarios or that the budget in the next year will be within the bounds of the faster-recovery and deeper-recession scenarios? No exact probability calculation is possible, because those scenarios are meant to illustrate the possibilities of events that might not be fully captured by the statistical analysis presented at the beginning of the chapter. The first five years of all of the scenarios lie within the bounds of the fan chart based on CBO's historical record.

Recovery from Recession

The current recession differs in important respects from previous recessions (as Chapter 2 discusses), and those differences make forecasting how the recovery will develop particularly difficult. Real possibilities exist of either a quicker recovery than CBO currently envisages or a more prolonged recession. Economic news coming in during the first weeks of 2002 seemed to point to a more rapid rebound, particularly in consumption, than CBO's baseline projections assume, but that could easily be reversed if consumers decide to cut back on their consumption to pay off debts or because they are unsure of their employment prospects. Three large sources of uncertainty are investment, the weakness of the world economy, and the inventory cycle. In addition, larger or smaller realizations of capital gains, which are hard to predict but probably have a cyclical component, could also affect budgetary outcomes.

CBO's baseline projections assume that the investment overhang described in Chapter 2 is being worked off and that investment will begin to pick up in the second half of 2002 as the economy recovers. That assumption could be wrong, however; there is no independent way to verify either the size of the overinvestment or the degree to which investment must fall to bring business equipment in line with needs. In CBO's forecast, investment begins to grow by the end of 2002 at about the pace of the late 1990s. That pickup could be earlier or later, and the growth rate could be either more sluggish (if businesses' confidence about future demand and profits remains poor) or faster (if the need to build inventories boosts demand and profits more quickly than anticipated).

Developments in other countries play an important role in the outlook for the United States, and the current outlook for the rest of the world is more likely to be weaker than stronger relative to what CBO's projections assume. As of early January 2002, forecasts for growth in Europe were being lowered, the outlook for Japan was becoming even bleaker, tensions between India and Pakistan were on the rise, and Argentina's currency crisis had brought down the government (and several successors). So far, there is little evidence that Argentina's problems are spilling over to other countries (as did currency problems in a few Asian countries in 1998). But the world economy is clearly no stronger than CBO's forecast assumes. In fact, it may be weakening further, which could reduce demand for U.S. goods and services and prolong the recession.

A few forecasters worry that if the recession deepened, the usual tools of monetary policy might reach their limit because interest rates are already very low, so policy cannot push them down much farther (see Box 5-3). That possibility seems remote; there is still room to lower rates by 1.75 percentage points, and if the recession worsened dramatically enough to require such a drop in interest rates, the Congress would also have the option to add fiscal stimulus. More fundamentally, the U.S. financial system is sound, and it is resistant to the difficulties that cramped the effectiveness of U.S. monetary policy in the 1930s and that of Japan today.

In contrast, some forecasters see the possibility of a substantially sharper recovery because inventories were run down much more rapidly than expected in 2001, setting the stage for a possible inventory rebuilding in 2002. Production could ratchet up more than the CBO forecast assumes if firms try to rebuild inventories aggressively. In this recession, as in past ones, the swing in production is likely to exceed the swing in final sales considerably. However, econo-

mists have had little success in predicting firms' inventory decisions, and a much more rapid rebuilding of inventory cannot be ruled out.

Although those factors cannot be quantified precisely, CBO has calculated illustrative budgetary impacts of a faster recovery or a continued and deeper recession (see Table 5-2). Those scenarios are chosen to reflect, on the optimistic side, a rapid bounce back from recession such as occurred on two previous occasions and, on the pessimistic side, a continued recession that becomes as large as the average postwar recession (that is, considerably deeper than the mild one in CBO's baseline forecast) before re-

Box 5-3.
Could Monetary Policy Lose Its Clout?

The economy remains weak even though the Federal Reserve has pushed the short-term interest rate on federal funds down to 1.75 percent and the real short-term rate on Treasury bills to 0.1 percent. The recession has been accompanied by a yearlong deflation in commodity prices and weak prices for goods in general, although the deflation has not spread to the larger service sector of the economy. Despite general weakness, long-term interest rates have not followed short-term rates down. In those circumstances, some commentators are concerned that monetary policy might not be able to do much more to stimulate the economy. A few analysts go farther and point to the Great Depression of the 1930s, when short-term rates were even closer to zero but failed to help the economy recover. They also point to current conditions in Japan, where the interest rates that the government uses to set monetary policy are virtually zero, deflation has prevailed since 1999, and the economy remains mired in a long and painful recession.

For monetary policy to stimulate economic activity, the channels through which it affects demand must be operating. The most important channels operate through banks and other financial intermediaries. Typically, the Federal Reserve purchases short-term securities from banks and other dealers, lowering short-term rates and increasing the funds that intermediaries can lend. If banks and other intermediaries are healthy (as is not the case in Japan), they will compete to make loans, causing longer-term rates to decline and encouraging businesses and households to borrow to finance spending. The decline in interest rates may also stimulate the stock and real estate markets, providing additional monetary-policy channels, either as corporations issue more stock or bonds to finance their investments in plant and equipment or as households increase spending in response to their capital gains. Declines in interest rates might also cause the dollar to depreciate, stimulating exports and shifting some import spending toward domestic alternatives.

Although the monetary-policy channels are generally working as usual in this economic downturn, analysts have observed a few worrisome weak spots. Banks have continued to lend in modestly growing amounts for real estate and consumer loans, but increased loan defaults have caused lending terms and conditions to tighten, and loans to businesses have declined. Businesses with good credit ratings have been able to borrow in growing amounts in the corporate bond market, though at long-term rates that are relatively high compared with short-term rates. Moreover, companies with poor credit ratings face an extremely scarce supply of credit at high rates, reflecting the perceived probability of default. The exchange-rate channel also has been blocked by slowdowns abroad and strong foreign preferences for U.S. investments that have caused the dollar's value to appreciate and held back U.S. exports.

At some point, further economic deterioration could clog the monetary-policy channels, although that eventuality does not seem likely. Should more companies lose money, cut payrolls, or slip into insolvency, lenders would be faced with further losses on loans to businesses and households. Losses from loan defaults and stock market declines that went beyond what banks and other intermediaries can absorb could choke off lending, as happened to banks in 1991 and 1992 and slowed the economy's recovery from recession. If deflation sets in as a result of a greater collapse in overall demand, firms may be reluctant to borrow, even at interest rates that are close to zero, if they see no prospect for profitable investments. Similarly, households may defer plans to purchase homes and durable goods. However, such monetary difficulties would not be likely to occur unless the recession became a great deal more severe than is now anticipated.

Table 5-2.
Key Economic Variables and Budget Consequences Under Alternative Cyclical Scenarios (By calendar year, in percent)

	2002	2003	2004	2005	2006
Growth of Real GDP					
Faster Recovery	2.7	4.4	2.8	2.5	2.8
CBO Baseline	0.8	4.1	3.7	3.2	3.2
Deeper Recession	-1.4	2.9	4.8	4.2	3.8
Growth of Wages Plus Profits					
Faster Recovery	5.1	7.7	5.0	4.7	4.7
CBO Baseline	1.2	7.4	6.4	5.1	5.2
Deeper Recession	-2.3	5.1	8.2	6.3	5.8
Short-Term Interest Rates					
Faster Recovery	2.5	5.0	5.2	4.9	4.9
CBO Baseline	2.2	4.5	4.9	4.9	4.9
Deeper Recession	0.9	2.0	4.0	4.9	4.9
Budget Surplus or Deficit (-) (By fiscal year, in billions of dollars)					
Faster Recovery	50	99	146	176	193
CBO Baseline	-21	-14	54	103	128
Deeper Recession	-89	-143	-64	10	50

SOURCE: Congressional Budget Office.

NOTE: See the text for a description of the faster-recovery and deeper-recession scenarios.

covery begins in 2003. Those scenarios define a range that is much wider than the range in January 2002 between the 10 most optimistic of the *Blue Chip* forecasters and the 10 most pessimistic of those forecasters.[2] However, the amounts by which those scenarios differ from the baseline forecast are similar to the revision that has occurred since January 2001 in CBO's forecast for 2002.

In the faster-recovery scenario, both GDP and the most important components of taxable income start to grow rapidly from the beginning of 2002, and they continue to grow at a high rate in 2003. Recoveries have occurred that quickly on two occasions: in 1968, following the slowdown of 1967 (which did not even qualify as an official recession), and in 1972, from the recession of 1970. By 2004, the growth rates slip below those of the baseline, because these scenarios reflect only alternative outlooks for the business cycle and do not envisage permanently higher or lower growth. (The possibility of different persistent trends in the economy is discussed in the next section.) With such a strong recovery, interest rates would be likely to rise quickly to their long-term level. The total budget surplus would return rapidly under that scenario, reaching nearly $100 billion in fiscal year 2003 and $200 billion in fiscal year 2006.

The deeper-recession scenario assumes that the current recession does not end in the first quarter of 2002 (as the baseline assumes) but rather develops into a recession of average duration and depth based on recessions from 1949 through 1990. Following the deeper recession is a more rapid recovery; as in the previous scenario, this one does not envisage that the deeper downturn implies a slower trend rate of growth. With a weaker economy, interest rates are lower, but not dramatically so; this scenario assumes that the Federal Reserve, as well as Congressional forecasters, are surprised by the extent of the recession and cannot fully counteract it. Under this scenario, the budget would deteriorate rapidly, subtracting about $130 billion from the budget balance in fiscal year 2003. The budget would remain in deficit for an additional year but would return to surplus in fiscal year 2005.

In addition to different economics, these scenarios assume that a faster recovery or a deeper recession would most likely mean a weaker or stronger stock market. For that and other reasons, taxpayers might alter their decisions about realizing capital gains. CBO does not forecast stock prices, but it does project capital gains realizations (see Table 3-6 in Chapter 3). About $10 billion of the better budgetary outcome under a stronger recovery and of the weaker budgetary outcome under a slower recovery is assumed to result from changes in capital gains receipts.

2. See Aspen Publishers, Inc., *Blue Chip Economic Indicators* (January 10, 2002).

Longer-Term Economic and Budget Trends

CBO has also constructed two alternative scenarios about future longer-term trends. They are intended to reflect assumptions that—although systematically different from the ones underlying the baseline projections—still seem reasonable to CBO analysts. They alter not only economic assumptions but also some assumptions that are usually labeled technical, such as assumptions about the level of capital gains realizations and the growth of spending for the major federal health care programs. (The scenarios illustrate possible alternative paths and are not intended to be symmetrical.)

The two trend scenarios illustrate a wide range of possible outcomes for the budget. Over the 11 years from 2002 through 2012, the optimistic trend scenario implies $3.7 trillion more in total surpluses than CBO's baseline projections do. The pessimistic trend scenario implies cumulative deficits that increase the government debt held by the public by more than $4 trillion by 2012 compared with CBO's baseline projections.

The Optimistic Trend Scenario. In this scenario, the favorable trends for the budget that existed between 1996 and 2000 continue more or less unabated after the economy recovers from recession. The average growth of labor productivity from 2001 to 2012 is 2.6 percent, matching its growth from 1996 to 2000, rather than the 2.1 percent growth assumed in the baseline. As a result, real GDP grows at a rate 0.3 percentage points higher than in the baseline (see Table 5-3). In addition, the scenario assumes that the recent dip in the effective tax rate is temporary: individual income tax liabilities as a share of taxable personal income rise rapidly over the next five years, to where they would have been had their growth in the late 1990s continued. Those tax liabilities therefore reach 17.5 percent of taxable personal income by 2012—2 percentage points higher than in the baseline—with a small amount of that increase resulting from the higher real growth and productivity assumed in this scenario. On the outlay side of the budget, the

Table 5-3.
Key Economic and Budget Assumptions in Alternative Trend Scenarios (In percent)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012
Growth of Real GDP											
Optimistic Scenario	0.3	4.0	4.3	3.6	3.5	3.5	3.5	3.5	3.4	3.4	3.4
CBO Baseline	0.2	3.6	4.0	3.2	3.2	3.2	3.1	3.1	3.1	3.1	3.0
Pessimistic Scenario	-0.1	3.1	3.4	2.7	2.6	2.6	2.6	2.5	2.5	2.5	2.5
Individual Income Taxes as a Share of NIPA Taxable Personal Income											
Optimistic Scenario	12.9	13.3	13.7	14.2	14.6	14.8	15.0	15.3	15.5	16.7	17.5
CBO Baseline	12.6	12.7	12.8	12.9	12.8	13.0	13.2	13.4	13.6	14.7	15.4
Pessimistic Scenario	12.3	12.0	11.8	11.5	11.1	11.1	11.2	11.4	11.5	12.5	13.2
Growth of Medicare and Medicaid Spending											
Optimistic Scenario	4.5	3.8	4.6	6.6	4.5	6.8	6.3	6.2	6.4	6.6	5.0
CBO Baseline	6.4	5.7	6.5	8.5	6.4	8.7	8.2	8.2	8.3	8.5	6.9
Pessimistic Scenario	8.2	7.6	8.4	10.4	8.3	10.6	10.2	10.1	10.2	10.4	8.9

SOURCE: Congressional Budget Office.

NOTES: See the text for a description of the scenarios.

NIPA = national income and product accounts.

Table 5-4.
Budget Surpluses Under Alternative Trend Scenarios (In billions of dollars)

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	Total, 2002-2007	Total, 2002-2012
Total Budget Surplus or Deficit (-)													
Optimistic Scenario	7	61	183	301	403	492	585	698	815	1,043	1,337	1,448	5,926
CBO Baseline	-21	-14	54	103	128	166	202	250	294	439	641	416	2,243
Pessimistic Scenario	-58	-101	-95	-115	-170	-194	-227	-259	-308	-268	-184	-732	-1,979
Debt Held by the Public (End of year)													
Optimistic Scenario[a]	3,353	3,307	3,140	2,857	2,471	1,995	1,426	743	-58	-1,087	-2,410	n.a.	n.a.
CBO Baseline	3,380	3,410	3,373	3,288	3,177	3,027	2,840	2,605	2,325	1,900	1,273	n.a.	n.a.
Pessimistic Scenario	3,417	3,534	3,646	3,779	3,966	4,176	4,418	4,693	5,015	5,297	5,495	n.a.	n.a.

SOURCE: Congressional Budget Office.

NOTES: See the text for a description of the scenarios. Unlike budget tables in other chapters, cumulative totals are for six and 11 years because these scenarios envision changes in 2002.

n.a. = not applicable.

a. In this scenario, the projected level of debt held by the public falls below CBO's estimate of debt available for redemption in 2009. Beyond that point, the federal government would accumulate "uncommitted funds"—CBO's term for the surplus that remains each year after paying down all publicly held debt available for redemption.

optimistic scenario assumes that spending for Medicare and Medicaid will grow at an annual rate that is nearly 2 percentage points lower than the rate in the baseline.

The budget outlook would improve dramatically under the assumptions of the optimistic trend scenario (see Table 5-4). By 2012, if there was no other action to cut taxes or increase spending, the annual surplus would exceed $1.3 trillion (more than twice the surplus projected under the baseline assumptions). With surpluses of that magnitude, the government's holdings of assets (uncommitted funds) would exceed federal debt held by the public to the tune of $2.4 trillion in 2012.[3]

The Pessimistic Trend Scenario. This scenario reverses most of the assumptions of the optimistic scenario and assumes that the economy reverts in many respects to its situation before 1996. In this scenario, trends in the economy are generally unfavorable to the budget. The pessimistic trend scenario assumes that the recent burst of productivity will prove temporary, so future productivity growth averages the 1.4 percent rate seen from 1974 through 1995 (cyclically adjusted), implying correspondingly lower GDP growth. In addition, the scenario assumes that individual income tax liabilities decline relative to taxable personal income to levels recorded before the increases that occurred in the second half of the 1990s (except that real bracket creep—inflation-adjusted growth in income that pushes people into higher tax brackets—is assumed to continue). Medicare and Medicaid spending is assumed to grow nearly 2 percentage points faster each year than in the baseline.

Under that scenario, the budget would remain in overall deficit for each of the 10 years of the projection period. Debt held by the public would rise to almost $5.5 trillion in 2012, compared with less than $1.3 trillion under baseline assumptions.

3. "Uncommitted funds" is CBO's term for the surplus that remains each year after paying down all publicly held debt available for redemption.